

**THAT WHICH IS CLAIMED IS:**

1. A method of screening a subject for increased likelihood of having a favorable response to estrogen replacement therapy with respect to cardiovascular health, comprising:

detecting the presence of the rare form of at least one estrogen receptor alpha polymorphism in said subject, the presence of said rare form of said estrogen receptor alpha polymorphism indicating said subject is more likely to have a favorable response to estrogen replacement therapy with respect to cardiovascular health than a subject with the common form of said polymorphism;

said at least one estrogen receptor alpha polymorphism selected from the group consisting of the rare form of the IVS1-354 polymorphism, the rare form of the IVS1-401 polymorphism, the rare form of the IVS1-1415 polymorphism, and the rare form of the IVS1-1505 polymorphism.

2. A method according to claim 1, wherein said detecting step further comprises detecting whether said subject is homozygous for said rare form of said at least one estrogen receptor alpha polymorphism.

3. A method for decreasing risk of heart disease in a subject, comprising:

(a) determining the presence of the rare form of at least one estrogen receptor alpha polymorphism in said subject; and, if said rare form of said estrogen receptor alpha polymorphism is present,

(b) administering estrogen replacement therapy to said subject in an amount effective to decrease risk of heart disease in said subject,

said at least one estrogen receptor alpha polymorphism selected from the group consisting of the rare form of the IVS1-354 polymorphism, the rare form of the IVS1-401 polymorphism, the rare form of the IVS1-1415 polymorphism, and the rare form of the IVS1-1505 polymorphism.

4. A method according to claim 3, wherein said detecting step further comprises detecting whether said subject is homozygous for said estrogen receptor alpha polymorphism.

5. A method according to claim 3, wherein said administering step is carried out by orally administering an estrogenic agent to said subject.

6. A method according to claim 3, wherein said administering step is carried out by transdermally administering an estrogenic agent to said subject.

7. A method according to claim 3, wherein said estrogen replacement therapy includes the step of administering a progestationally active compound to said subject in an amount effective to inhibit estrogenic endometrial proliferation.

8. A method of treating a subject for depressed HDL levels, said method comprising the steps of:

selecting a subject that carries the rare form of at least one estrogen receptor alpha polymorphism, and then

administering estrogen replacement therapy to said subject in an amount effective to increase HDL levels in said subject,

said at least one estrogen receptor alpha polymorphism selected from the group consisting of the rare form of the IVS1-354 polymorphism, the rare form of the IVS1-401 polymorphism, the rare form of the IVS1-1415 polymorphism, and the rare form of the IVS1-1505 polymorphism.

9. A method according to claim 8, wherein said selecting step further comprises selecting a subject that is homozygous for said estrogen receptor alpha polymorphism.

10. A method according to claim 8, wherein said administering step is carried out by orally administering an estrogenic agent to said subject.

11. A method according to claim 8, wherein said administering step is carried out by transdermally administering an estrogenic agent to said subject.

12. A method according to claim 8, wherein said estrogen replacement therapy includes the step of administering a progestationally active compound to said subject in an amount effective to inhibit estrogenic endometrial proliferation.

13. An isolated nucleic acid encoding the human estrogen receptor alpha, said isolated nucleic acid containing the rare form of the IVS1-1415 polymorphism.

14. An oligonucleotide that specifically binds to an isolated nucleic acid according to claim 13, which oligonucleotide does not specifically bind to an isolated nucleic acid encoding the human estrogen receptor alpha that does not contain said rare form of said polymorphism under the same hybridization conditions.

15. A recombinant vector that contains a nucleic acid according to claim 13.

16. A host cell that contains a heterologous nucleic acid according to claim 13.

17. An isolated nucleic acid encoding the human estrogen receptor alpha, said isolated nucleic acid containing the rare form of the IVS1-1505 polymorphism.

18. An oligonucleotide that specifically binds to an isolated nucleic acid according to claim 17, which oligonucleotide does not specifically bind to an isolated nucleic acid encoding the human estrogen receptor alpha that does not contain said rare form of said polymorphism under the same hybridization conditions.

19. A recombinant vector that contains a nucleic acid according to claim 18.

20. A host cell that contains a heterologous nucleic acid according to claim 18.

21. A method of conducting a clinical trial on a plurality of human female patients, said method comprising:

administering a test hormone replacement therapy to said plurality of subjects;

detecting the presence of at least one estrogen receptor alpha polymorphism in said plurality of subjects, said at least one estrogen receptor alpha polymorphism selected from the group consisting of the IVS1-354 polymorphism, the IVS1-401 polymorphism, the IVS1-1415 polymorphism, and the IVS1-1505 polymorphism; and

determining the influence of said detected polymorphism on at least one of (i) the efficacy of said hormone replacement therapy, (ii) a favorable response to said hormone replacement therapy with respect to cardiovascular health, (iii) a favorable response to said hormone replacement therapy with respect to risk of heart disease, or (iv) a favorable response to said hormone replacement with respect to HDL levels.

*v2* 21. The method according to claim 20, wherein said detecting step is carried out prior to said administering step.

*v3* 22. The method according to claim 20, wherein said detecting step is carried out after said adminisitering step.

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